

Laborator si seminar

Programare in Java si software matematic

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Packages

Package is a grouping of related types (classes, interfaces, enumerations and annotations) providing access protection and namespace management.

Some of the existing packages in Java are –

- **java.lang** – bundles the fundamental classes
- **java.io** – classes for input , output functions are bundled in this package

Why Packages

Packages are used in Java in order

- to prevent naming conflicts
- to control access
- to make searching/locating and usage of classes, interfaces, enumerations and annotations easier, etc.

How to create Packages

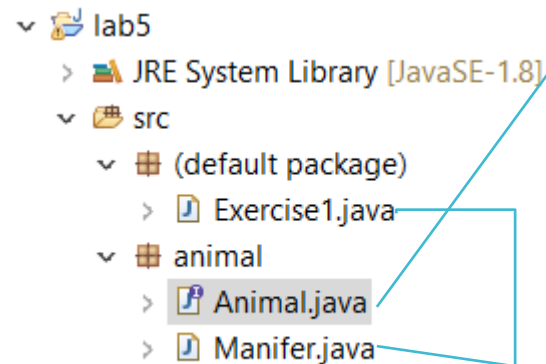
Use of the Key word **package**

Package statement is the first line of the source file

It can be only one package statement in each source file

If **package** statement is not used then the class, interface, enumerations and annotation type will be placed in the current default package

Package



```
Animal.java  Manifer.java  Exercise1.java ✕  
1  import animal.*;  
2  
3  public class Exercise1 {  
4      public static void main(String[] args) {  
5          Manifer o = new Manifer ();  
6          o.travel();  
7      }  
8  
9  }  
10
```

```
Animal.java ✕  Manifer.java  Exercise1.java  
1  package animal;  
2  
3  public interface Animal {  
4      public void eat();  
5      public void travel();  
6  }  
7  
Animal.java  Manifer.java ✕  Exercise1.java  
1  package animal;  
2  
3  public class Manifer implements Animal {  
4      public void eat() {  
5          System.out.println("Manifer eats");  
6      }  
7  
8      public void travel() {  
9          System.out.println("Manifer travels");  
10     }  
11  
12     public int noOfLegs() {  
13         return 0;  
14     }  
15  
16     public static  
17         Manifer  
18         m.eat();  
19         m.travel();  
20     }  
21 }  
22
```

int animal.Manifer.noOfLegs()

Press 'F2' for focus

Package Directory Structure

> AnritsuLeaderProgramm > Master TCSI Teoria Codarii si Stocarii informatie > java > lab > lab5 > src >			
Name	Date modified	Type	Size
animal	5/10/2020 12:27 AM	File folder	
Exercise1	5/10/2020 12:28 AM	JAVA File	1 KB

rogramm > Master TCSI Teoria Codarii si Stocarii informatie > java > lab > lab5 > src > animal			
Name	Date modified	Type	Size
Animal	5/9/2020 11:39 PM	JAVA File	1 KB
Mamifer	5/10/2020 12:28 AM	JAVA File	1 KB

A package/folder with the name **animals** will be created in the current directory and these class files will be placed in it as shown below.

Packages Prevent Name Conflict

lab - lab5/src/test/Exercise2.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

Package Explorer

- lab1
- lab2
- lab3
- lab4
- lab5
 - JRE System Library [JavaSE-1.8]
 - src
 - animal
 - Animal.java
 - Mamifer.java
 - test
 - Exercise1.java
 - Exercise2.java
 - Mamifer.java

Animal.java

```
1 package test;
2
3 public class Exercise2 {
4     public static void main(String[] args) {
5         Mamifer mam = new Mamifer();
6         System.out.println("No of legs " + mam.noOfLegs());
7     }
8 }
9
```

Exercise1.java

```
1 package animal;
2
3 public class Mamifer implements Animal {
4
5     public void eat() {
6         System.out.println("Manifer eats");
7     }
8
9     public void travel() {
10        System.out.println("Manifer travels");
11    }
12
13    public int noOfLegs() {
14        return 0;
15    }
16
17    public static void main(String args[]) {
18        Mamifer m = new Mamifer();
19        m.eat();
20        m.travel();
21    }
22 }
```

Mamifer.java

```
1 package test;
2
3 public class Mamifer {
4     public void eat() {
5         System.out.println("Manifer eats a lot");
6     }
7
8     public void travel() {
9         System.out.println("Manifer travels a lot");
10    }
11
12    public int noOfLegs() {
13        return 2;
14    }
15 }
```

Homework

Please write a new app in test Package and define objects of Mamifer Type from both test and animal Package. Tip: use both Exercise 1 and 2.